Group Care for the Pediatric Well-Child Population:

A qualitative study

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ABSTRACT

Background: The Institute of Medicine and Future of Family Medicine Project encourage physicians to develop innovative models of care to better meet patients' changing health care needs. Although interest in the group care model is growing, little is known about the practicality and application of group visits for infant well-child care.

We created and implemented a group model of well-child visits, WellBabies. As an initial step to assess well-child group visits, we conducted a study to explore the experiences and perceptions of parents who participated in the WellBabies program. The specific aims of the study were to: (1) understand parents' preferences and rationales for choosing the WellBabies program instead of regular care; (2) determine parents' opinions regarding favorable and unfavorable aspects of WellBabies; (3) understand parents' needs and preferences regarding the preventive well-child visits; and (4) elicit feedback for improvement of the WellBabies program.

Methods: In preparation for this exploration, a systematic review of literature pertaining to pediatric well-child group visits was performed in order to obtain evidence on the development, utilization and progress of the group visit. The MEDLINE database and Cochrane Library were searched, and articles from 1972 – 2007 were selected based on outlined criteria.

Then, individual semi-structured interviews were conducted with mothers who participated in the WellBabies program at an academic family medicine center. 13 mother-infant dyads of WellBabies participants to date were invited: 8/13 were first time moms, 5/13 were privately insured. Editing analysis was used to code the transcribed data and identify emerging themes. Health information was extracted from the patients' charts for descriptive purposes.

Results: The systematic review of the literature included seven studies satisfying the outlined criteria. The studies were of varying quality, used diverse designs and examined a variety of outcomes. All of the studies found that group visits were at least as efficient and effective as the individual visits. In two studies examining patient satisfaction or perception, group visits were found to be a positive experience with at least equivalent satisfaction as individual visits.

In the interviews with WellBabies participants, most frequently given reasons to participate include additional support from other parents and the provider, additional time with the doctor, and desire for a social activity. Participants enjoyed many aspects of the visit including the structure of the group visits, the widespread support and having other children to see and learn from. Few participants had dislikes, but suggestions for improvement included additional administrative support and patient education materials. Only one of the 13 participants said that lack of individual time was a disadvantage of the group visits.

Discussion: WellBabies group visits appear to be a positive experience for the participants and a promising alternative model of care. Next steps include increasing organization and developing comprehensive education materials for the participants. Future study includes a cost effectiveness evaluation of the WellBabies program and a prospective comparison of health outcomes and quality indicators between patients receiving individual versus group care.

INTRODUCTION

Well-child care is an important part of every child's health care. Regular well child visits are organized, starting at birth, to assure that physicians have the opportunity to screen for developmental progress and pediatric health conditions, as well as to provide age-appropriate immunizations. There are also important opportunities for educating the child's parent or guardian and providing anticipatory guidance at every well-child visit. Therefore, well-child care is an integral part of the healthcare system for children.

Foundations for health, including physical, emotional, and cognitive health, are established early in life and can be further developed at well-child visits.[1] Although questions still remain regarding the efficacy of individual recommended interventions for the well-child visit,[2] consistent well-child care has been shown to improve health outcomes.

In 2001, the Institute of Medicine acknowledged the need for a change in the delivery of America's health care in the report, *Crossing the Quality Chasm*.[3] These needs relate to increasing numbers of patients from a variety of cultures, minimal financial resources, and a rising group of uninsured patients.[4] The Future of Family Medicine Project (FOFM) also encourages family physicians to develop innovative models of care to better meet patients' changing health care needs.[5, 4] The purpose of this paper is to discuss group visits as a new model of care for well-child health services. The group model of care is gaining attention in many health care settings, and as a prelude to a discussion of efficacy and effectiveness of group visits, this paper will explore what makes group visits a practical, attractive alternative to traditional well-child care and an innovative model from parents' perspectives.

Background on Traditional Well-Child Care

Traditionally, well-child care involves an individual visit scheduled with the child's primary care provider. The American Academy of Pediatrics (AAP) has issued recommendations for preventive pediatric health care for each visit during infancy, childhood and adolescence, which vary depending on the individual health needs of the child and his or her care-givers. These guidelines extend from the prenatal period to 21 years of age and address elements of preventive care such as vision and hearing screening, immunizations, cholesterol screening and anticipatory guidance.[6]

Although the efficacy of all elements of the well-child visit is still being investigated, it has been shown that consistent well-child care in the first two years can decrease preventable hospitalizations.[7] However, studies show that many children do not comply with the schedule recommended by the AAP.[8] A recent study based on evidence from the 2000-2002 Medical Expenditure Panel Survey showed that only 44 percent of all children had attended one or more well-child visits in one year preceding the survey, and a mere 61 percent of all children had seen a provider for a well-child visit in the previous two years.[8] Discrepancies existed based on the age of the child, insurance status and caregiver's level of education.

With fewer than half of all children seeing a provider annually for preventive care, traditional well-child care is not addressing the health care needs of those it is setting out to serve. A study recently showed that 94 percent of parents said they had one or more unmet needs regarding four specified measures of guidance, education, screening for psychosocial risk and screening for smoking, drug and alcohol use.[9] With financial constraints and the limitations of the current medical system, physicians are limited in how much guidance and education they can provide in a 20-minute office visit. No matter how good the physician's intentions, it is

impossible to cover every recommended item for the physical exam in such a short amount of time in addition to completing the immunizations, hearing screen and vision screen.[10]

Although there are recommendations for what should be addressed in well-child visits, no standards exist for conducting the encounter.[11] With the recommendations' efficacy in question, the value of a well-child visit as far as insurance coverage and reimbursements are concerned is at risk.[11] Also, with so many parents left feeling their needs were unmet and physicians frustrated by severe time constraints that limit their ability to provide comprehensive care, it is timely to examine how well-child care is delivered.

A New Model of Care

One innovation that may address these needs is the establishment of group care.[12] Group visits entail a similar set of components as individual care, but are delivered in a group setting. The group may be six to eight persons, but varies depending on the purpose of the group visit, which is often patient education and self-management topics such as medicine management, nutrition, and exercise.[13] By seeing many patients together for a longer period of time, the time the provider spends with the patients is increased and in theory it is economically advantageous.[13] Also, by offering alternatives and choices in health care, different types of patients may gravitate toward one or the other approach.

There are potential drawbacks to this model however. Although the physician is in a room with the patients for a longer time than with traditional visits, there may be less individualized attention than in the typical 20-minute appointment for one patient. Other elements that may hinder group care include finding an adequate space as well as a time convenient for everyone wishing to participate.

Group visits for chronic diseases

Group visits have to-date generally been of two types: drop-in group medical appointments (DIGMAs) and diagnosis-specific. Diagnosis-specific group visits have gained attention, particularly within the Chronic Care Model, which was found to improve care and potentially reduce costs for diabetic patients.[14, 15] Another study identified advantages of the group visit model for diabetic patients as improved organization, higher educational value, and more frequent visitations.[16] This one-year randomized controlled trial compared diabetics' clinical outcomes and quality of care measures for those participating in group models of care to those in traditional, individual care. Although clinical measures, including HbA1c, blood pressure and lipid panels, did not differ significantly between the two groups, over the longer-term, patients receiving group care had higher quality of care indicators and better screening rates for breast and cervical cancers.[16]

A 2006 review paper on group model practices found improvements over traditional care in patient and provider satisfaction, trust in the provider, utilization of services, quality of care, and provider productivity. The review found few improvements in the cost of care. The authors acknowledged great variability in group model design and outcome measurements as threats to the generalizability of their findings, but noted consistency in improved satisfaction.[13]

Group visits for prenatal care

There has also been success with CenteringPregnancy©, a model of group visits for prenatal care.[12, 17] Developed in 1993 at the Yale University School of Nursing, this program brings the elements of prenatal care, including education and support, together in a group care setting.[12, 18] In the CenteringPregnancy© model, women are grouped based on their estimated delivery dates and are encouraged to share personal experiences while assuming a higher level of

individual responsibility for their own health.[12] The groups meet regularly with an interdisciplinary team of providers, and as of 2006, over 100 sites were participating in group prenatal care throughout the United States and Canada.[12, 19] An analysis of CenteringPregnancy© participants found that compared to traditional care, women in the group program had longer gestations and heavier birth weights, especially in preterm births.[20] A further benefit of the prenatal group care model is the additional time for each visit as compared to traditional care.[21]

The prenatal group visit model has been shown to be especially attractive for adolescents as it has unique empowerment, peer support, and socialization components not occurring in traditional, individual care.[12, 22] CenteringPregnancy© has also been shown to improve health outcomes of pregnant adolescents and increase patient satisfaction and compliance.[23]

Applying the group model to pediatric health care

While the group care model has been successful in visits dedicated to chronic diseases of adulthood and in CenteringPregnancy©, ironically little is known about the very first model of group care developed in 1974 – group well-child care then known as "cluster visits."[24]

In 1981, a controlled study was published by Lucy Osborn comparing group pediatric visits to traditional care aiming to examine the process, patient satisfaction, efficiency, and efficacy of group visits.[25] This study found group visits were an efficient means of delivering well-child care. The group visits were timely and required no more time than traditional, individual visits per patient. Of note, patients were with the provider for an average of 52 minutes per visit of shared time, while the children receiving traditional care had an average of 16 minutes with the provider.[26] Although patient satisfaction was not improved by attending a group visit, the group settings were preferred by 37 of 38 mothers in the experimental group due to its additional benefits of group interactions and support.[26] At the conclusion of the study, eight

of 11 groups requested that the group visits continue, and the clinicians delivering the group care thought the model was effective.[26]

In contrast to the review findings mentioned above, in which all group-visit models decreased the utilization of additional health services, Osborn's study of group well-child care did not show that patients had a significant difference in emergency department visits or calls to providers related to illness. [26] This trial was small, the population narrow, and realizing the potential for bias, authors called for further research to examine efficiency, efficacy and other outcomes relating to group well-child care, as preliminary results were promising.

The author of the aforementioned study, Osborn, published additional articles in 1982 and 1985 describing the format, potential for use, and the benefits of well-child group care.[27, 28] Based on 15 years of group model use, in 1989, Osborn then published an article on the opportunity for patient education in group well-child care.[29] She discussed perceived benefits of the model including the opportunity for lengthy patient education sessions, support groups and reassurance for the children as they are in a setting with other children.[29]

However, few articles specifically covering group well-child care have been published since the 1980s. In the late 1990s, Taylor et al. published a collection of articles on group care specifically targeting high-risk children and their mothers. The articles examined maternal-child interactions and developmental outcomes as well as infant health care utilization, health status and maternal health outcomes.[30-32] These articles were the result of a randomized controlled trial including infants qualifying as high risk based on one or more of the follow maternal criteria as defined by Taylor, et al.: poverty, single, less than a high school education, less than 20 years of age at delivery, history of substance abuse or history of physical abuse.[30] They concluded that based on developmental outcomes and the interaction of the mother and child, that group well-

child care was just as good as individual care.[30, 32] With respect to health care utilization and health status analysis, high-risk children receiving group care did not differ from those receiving individual care.[31] Because there was not an increase in provider time needed to conduct the groups, authors concluded that group well-child care was a promising alternative to individual care.

Group models have been used for pediatric chronic diseases and mental health although neither of these has been well studied. Most of these "group" models were based on patient education, family teaching or therapy. Asthma, a chronic disease of childhood, was a focus of various group models. A Cochrane Collaboration review examined educational interventions for asthma in children.[33] They found that individual and group interventions resulted in similar improvements in lung function, self-efficacy and emergency department visits.[15] They note however, that the number of studies available for comparison between individual and group interventions is very small. They reported trials that compared a combination of individual and group interventions but no studies that were a direct comparison of individual versus group care for asthma.[15] Although group settings are being used for asthma education, they have little evidence to guide them and support the intervention.

In 2004 an article was published illustrating a new collaborative approach to preventing conduct disorder in at risk rural preschool children by using a group care model.[34] This program "Learning, Enjoying, Growing, Support" (LEGS) was designed to develop social skills in participating children and enhance parenting for the caregivers. At the conclusion of the program, there was a decrease in problem behavior, an increase in children's social skills, and an increased sense of support from the parents' perspectives.[34] This study is unlikely to be generalizable to well-child care in the United States, but it does present evidence that the group

care setting can provide support to parents in the health care system and reach a somewhat "unreachable" community.

Following CenteringPregnancy© is yet another model of group child care known as "CenteringParenting."[35] Established by The CenteringPregnancy© and Parenting Association (CPPA) in 2001, this group is working to develop a pediatric group care model that will allow mothers involved in CenteringPregnancy© to continue groups for their child's care during the first year of the child's life. No further information regarding this model was available after the proposal in 2004, although the website for CPPA (http://www.centeringpregnancy.com/) does refer to ongoing training workshops for "CenteringParenting."[35]

In summary, it remains unclear if a pediatric group model will work in the current health care climate for well-child care. The model used by Osborn et al. differs from the newer group models in design. The older model included physical exams in an individual setting with counseling and education in the group; yet many of the newer group models provide all elements of the visit within the group setting.[29] Instead of the provider weighing, measuring and examining each child individually, in many of today's models, the caregivers participate in the weighing and measuring, learn to do it on their own, and help each other with the process. Since 1997, the economy of health care is changing, increasing demands and strains are being placed on providers, and an analysis needs to consider well-child group visits in the current environment. With few contemporary articles examining the use of groups in childhood diseases, there is little basis for the efficacy and efficiency of well-child pediatric group care in today's health-care setting.

Part I. Literature Review

Systematic Review of Group Well-Child Care

A systematic review of literature pertaining to pediatric group visits was performed in order to obtain evidence on the development, utilization and progress of the group visit. The body of evidence existing for group visits was known to be limited, but it is growing as group visits are becoming more popular and further studied. However, many of the existing articles relate to group visits in the adult population as a model of treating chronic disease.

METHODS

Key Questions

This literature search was focused on pediatric, well-child group visits. The following primary questions were examined:

1. Has a model been developed for delivering group well-child care to the pediatric population?
2. Are parents/caregivers satisfied with the group model of care for well-child visits?
3. Are group models an efficient mode of delivery of well-child care?
4. Are group models an effective method of delivery of well-child care based on clinical outcomes and patient satisfaction?

Inclusion and Exclusion Criteria

Due to the limited body of evidence, very broad inclusion and exclusion criteria were generated for this review (Table 1). The review included any article relating to group visits provided that it was original research focused on pediatric well-child care. Although current practices are evolving, due to the scarcity of the literature a broad range of dates were included of publication between 1972 and the present. Studies were not limited to those conducted in the United States.

Table 1: Inclusion and Exclusion Criteria

Study population   - Children ages birth to 18 years old and/or their parents or caregivers   - All cultural groups and races
Intervention   - Original quantitative or qualitative research regarding group office visits for well-child care; May include observational studies   - Exclude review articles
Time Period   - Research conducted from 1972 to 2007
Setting   - Any geographical setting; Not limited to the United States
Publication Criteria   - English   - Articles in print

Literature Search

Databases and search terms

The search included the MEDLINE database and the Cochrane Library. A wide variety of search terms were used beginning with the seemingly broad term "group visit*." Other terms were used including but not limited to: "group office visit*," "group care," "group appointment," "group well child," "group well baby," and "group model." They were combined in multiple ways with medical subject headings (MeSH). MeSH terms: "models, organizational," "child health services/organization & administration," "health promotion/organization & administration," and "patient education" were found to be pertinent to the topic of interest.

Article selection and review

MEDLINE: No articles were found when using the search terms: "(pediatric* OR paediatric* OR child OR children) AND ("group visit*")." Searching only "group visit*" yielded few results (n=28). Searching "(pediatric* OR paediatric* OR child or children)" resulted in 1,503,252 articles. In an attempt to further limit, this search was combined with "("group visit*" OR "group office visit*" OR "group appointment*" OR "group medical appointment*" OR "group well child" OR "group well baby" OR "group model")" (n= 24,285) and resulted in no articles. Using the MeSH term "child health services/organization," 7,524 articles resulted. Searching a combination: "child health services/organization AND ("group*" OR "group visit*" OR "group office visit*" OR "group care" OR "patient education")" yielded 640 results. This was narrowed by title and abstract review to eight articles for full review and three fit the selection criteria.

Due to the few results, the "see all related articles" option in PubMed was used for each article and yielded 1503 additional results. Of these, three were relevant to the review and were

not duplications of already selected references. The references of the six selected articles were reviewed for additional relevant references. This method resulted in 104 additional articles of which one was relevant. A total of seven articles were finally selected for review (Table 2).

Table 2: Literature Search

Database/Search Strategy	***References Identified***	***Number After Title Review (non-duplicative)***	***Number After Abstract Review***	***Number After Full Review***
MEDLINE				
"child health services/organization AND ("group*" OR "group visit*" OR "group office visit*" OR "group care" OR "patient education")"	**640**	**21**	**8**	**3** *Taylor, et al. Health care utilization and health status in high-risk children randomized to receive group or individual well child care. *Pediatrics*. 1997 Sep; 100(3):E1. *Taylor, et al. A randomized controlled trial of group versus individual well child care for high-risk children: maternal-child interaction and developmental outcomes. *Pediatrics*. 1997 Jun; 99(6):E9. *Osborn, LM. Use of groups in well child care. *Pediatrics*. 1981 May; 67(5):701-6.
Using "see all related articles" for above (*)	Taylor, et al. *Pediatrics*. 1997 Sep; 100(3):E1. **886**	**8**	**5**	**3** **Feldman, M. Care of the well child: cluster visits. *Am J Nurs*. 1974 Aug; 74(8):1485-8. **Dodds, et al. Group health supervision visits more effective than individual visits in delivering health care information. *Pediatrics*. 1993 Mar; 91(3):668-70. **Taylor, et al. Group well-child care for high-risk families: maternal outcomes. *Arch Pediatr Adolesc Med*. 1998 Jun; 152(6):579-84.
	Taylor, et al. *Pediatrics*. 1997 Jun; 99(6):E9.	**0**	**0**	**0**

	491			
	Osborn, LM. *Pediatrics.* 1981 May; 67(5):701-6. **126**	**2**	**2**	**0**
Using references from above(*, **)	Taylor, et al. *Pediatrics.* 1997 Sep; 100(3):E1. **21**	**0**	**0**	**0**
	Taylor, et al. *Pediatrics.* 1997 Jun; 99(6):E9. **31**	**1**	**1**	**1** Rice RL, Miles CE, Slater CJ. An analysis of group versus individual health supervision visits. *AJDC.* 1992;146:488. Abstract only.
	Osborn, LM. *Pediatrics.* 1981 May; 67(5):701-6. **12**	**0**	**0**	**0**
	Feldman, M. *Am J Nurs.* 1974 Aug; 74(8):1485-8. **3**	**0**	**0**	**0**
	Dodds, et al. *Pediatrics.* 1993 Mar; 91(3):668-70. **10**	**0**	**0**	**0**
	Taylor, et al. *Arch Pediatr Adolesc Med.* 1998 Jun; 152(6):579-84: **27**	**0**	**0**	**0**
Cochrane Library (**group** and **child** or **pediatric** and **well child**)	**1447**	**2**	**1**	**0**
"group visit*"	**28**	**0**	**0**	**0**
Totals	**3722**	**34**	**17**	**7**

Evaluation of Quality

Quality rating

The quality of each selected article was assessed by a numerical grading scale. The scale took into account the study question, the population, the intervention, outcome measures, the adequacy of any statistical measures and the control of potential biases (through blinding, randomization, etc). These domains for evaluation were adapted from information presented by Lohr's summary of review systems.[36] Using Lohr and West, et al., a numerical scale was developed and ratings were assigned to each study as 0 = poor, 1 = fair, 2 = good.[36, 37]

A peer article selection and review process was used. One reader initially searched the databases for articles, and in the case of large returns eliminated based on title. Following this initial step, a second rater became involved at the abstract level reading those that had been eliminated without certainty. If any discrepancy resulted, a third rater served as an adjudicator. After the final selection of articles was determined, raters assigned a number to each article and the numbers were averaged for a composite score. This rating process has not been validated and thus is left to careful interpretation, however it is based on evidence for reviews of this type.[36, 37]

The literature review included seven studies published between 1974 and 1998. The studies included qualitative, prospective controlled and randomized controlled designs, were of various qualities and examined a variety of outcomes (See Table 3, *Part I* Results). Three of the studies were conducted by the same author on one data set and examined different research questions. While two of the studies' populations were all mother-infant pairs interested in participating, two studies included populations of only first or second-time mothers and their infants, while three focused only on children with defined maternal high-risk factors. The outcomes included an exploration of mothers' perceptions of the visit, physician opinions of the

visits, efficiency, effectiveness, content and other health-related outcomes such as health care utilization and immunization rates.

RESULTS

Source Table

Full search results are illustrated in Table 3. For each of the seven articles fulfilling the inclusion criteria, an evaluation of the study question, the population, the intervention, outcome measures, the adequacy of any statistical measures and the control of potential biases (through blinding, randomization, etc.) was evaluated. Using Lohr and West, et al., a numerical scale was developed and ratings were assigned to each study as 0 = poor, 1 = fair, 2 = good.[36]

Table 3: Systematic Review Search Results

Reference	Study Question	Study Design	Population	Intervention	Outcomes	Quality
Feldman, M. **Care of the well child: cluster visits.** *Am J Nurs.* 1974 Aug; 74(8):1485-8.[24]	What is the value and acceptability of group visits?	Qualitative Pilot study Conducted from August 1972 through January 1973	Mothers with their first or second baby who were members of a large health care organization	Group well-child visit conducted by Pediatric Nurse Practitioner, 1.5 hours in duration, for 4 mother-infant pairs. - Visits consisted of 40 minutes for one-on-one physical exams in the group, discussion time, physician consultation at end if necessary, followed by immunizations - Group visits	Mothers' perceptions of the visit. NP and Physician opinion of visits.	1

				(four in the first year) were alternated with individual visits		
Osborn, LM. Woolley, FR. *Use of groups in well child care.* **Pediatrics.** 1981 May; 67(5):701-6.[26]	To assess the efficiency, efficacy, content, process and patient satisfaction associated with group well-child care as opposed to traditional, individual care	Prospective, controlled	78 Mother-infant pairs including healthy infants who are seen by 8 health care professionals (11 experimental groups)	Group visits including a 45 minute group discussion followed by brief individual physical exams held on the usual schedule of well-child visits	Efficiency: clinician time spent per infant Effectiveness: patient compliance and utilization of health care services Content/Process: Checklist including, medical, hygiene, behavior, personal, history taking, explanations, anticipatory guidance Satisfaction: assessed by questionnaire of the mother after the second visit and telephone interviews at completion; personal interviews of provider	1
Rice RL, Miles CE, Slater CJ. *An analysis of group versus individual health supervision visits.* **AJDC.** 1992;146:488. *Abstract only.* [40]	To compare the effectiveness of group health visits to individual visits in teaching about child care and development, perceived maternal support and decreasing maternal depression	Prospective, controlled	50 First born infants and their mothers	Group visits with 3 or 4 parent-infant pairs lasting ~1 hour conducted at 2, 4, 6, and 10 months	Knowledge of child care and development questionnaire (CDQ), Maternal Social Support Index (MSSI) and the Center for Epidemiologic Studies Depression Scale (CESD)	0.5
Dodds M, Nicholson L, Muse B, et al. *Group health*	(1) Determine the extent to which pediatricians	Prospective, controlled	31 Pediatricians who regularly conducted child health	Group health supervision visits of 4-6 mother-child pairs	Information covered in content areas including safety,	1

supervision visits more effective than individual visits in delivering health care information. **Pediatrics.** 1993 Mar; 91(3): 668-70.[41]	cover recommended topics during preventive care visits (2) Compare how much material is covered in and individual visit compared to a group visit		supervision visits	- visits were ~45 minutes in duration after which children had an individual physical exam and immunizations if necessary	nutrition, behavior and development, family and parenting, sleep, immunizations, and general health	
Taylor J, Davis R, Kemper K. *Health care utilization and health status in high-risk children randomized to receive group or individual well child care.* **Pediatrics.** 1997 Sep; 100(3):E1[31]	To determine if health care utilization and health status among high-risk children is modified by the use of group well child care as compared with traditional one-to-one individual well child care	RCT conducted between March 1993 and February 1996	220 children less than 4 months old with at least one of the following maternal risk factors: poverty, single, age <20 years at delivery, less than a high school education, previous substance about, history of abuse	Group well child care with nurse practitioners at 4, 5, 6, 7, 10, 12, and 15 months of age - 30-60 minute visits consisting of child-rearing issues, physical exam, screening and immunizations	Compliance with scheduled visits, emergency department visits, immunization rates, time per/visit, health status using Stein's Functional Status IIR	2
Taylor J, Davis R, Kemper K. l. *A randomized controlled trial of group versus individual well child care for high-risk children: maternal-child interaction and developmental outcomes.* **Pediatrics.** 1997 Jun; 99(6):E9.[30]	To determine if group well child care for high-risk children affects maternal-child interaction and development as compared to these outcomes in children receiving traditional individual well-child care.	RCT conducted between March 1993 and February 1996	220 children less than 4 months old with at least one of the following maternal risk factors: poverty, single, age <20 years at delivery, less than a high school education, previous substance about, history of abuse	Group well child care at 4, 5, 6, 8, 10, 12 and 15 months of age. - 30-60 minute visits consisting of child-rearing issues, physical exam, screening and immunizations	Development: Bayley Scales of Infant Development Maternal-child interaction: Nursing Child Assessment Teaching Scale an the Home Observation for Measurement of the Environment	1
Taylor J, Kemper K. *Group well-child care for high-risk families: maternal outcomes.* **Arch Pediatr**	To determine if health supervision group visits for infants improves outcomes compared with individual	RCT conducted between March 1993 and February 1996	220 infants' mothers who had at least one of the following risk factors: poverty, single, age <20 years at delivery, less than a high	Group well-child care from 4 months to 15 months of age. - 30-60 minute visits consisting of child-rearing issues, physical	Sense of Competence, Social Isolation subscale and the Social Support Questionnaire completed by mothers	1

Adolesc Med. 1998 Jun; 152(6):579-84.[32]	visits in high-risk mothers		school education, previous substance about, history of abuse	exam, screening and immunizations - Social workers met with mothers during the study and assessed return to school or work, substance abuse treatment		

Findings

Feldman conducted a pilot study in 1974 to explore the perceptions of mothers who participated in a group care model at Kaiser-Permanente.[24] She was interested in answering the questions of if patients at the health center "would welcome the innovation," "might mothers be upset by noticing differences between babies," and "would (mothers) fear cross infection between babies in the same examining room?" The qualitative study is limited to women with their first or second child and may be less generalizable to more experienced mothers. At the conclusion of the study, perceptions of the mothers and the providers participating in the process are questioned. Specific questions asked were not listed although responses reported in the paper allow the questions to be deduced. The exact process of interviewing was not described so an accurate assessment of the reliability and validity of the responses cannot be determined.

The results of this study were positive and reports that all of the mothers said they would recommend group visits and felt more confident as mothers after participating. They enjoyed meeting other women with babies, sharing their feelings, and liked observing the differences in growth and development among the babies.[24] The perspectives of the providers were not well-reported.

Osborn and Woolley reported a controlled study comparing women participating in group visits for their infant's well child care to those in traditional, individual care.[25] This study has some potential for selection bias as it was not random due to the number of women available. Women chose to participate, but did not know which group they would be assigned to at enrollment. Participants in the study were entirely white, middle class and mostly Mormon contributing to the possibility of bias, confounding and less generalizability. There is also some potential for measurement bias as there were different types of providers conducting the visits. Pediatricians, family practitioners and a family nurse practitioner all provided care and as no attempt was made to standardize the visits, the internal validity may be compromised. However, it is likely more generalizable to general practices.

The measures used in this study included efficiency, process of visit and patient satisfaction. Efficiency was measured by comparing clinician time spent per infant, and effectiveness was determined by examining the patient's compliance with recommendations and number for visits to health care facilities. Content and process of the visits was evaluated by monitoring the provider's way of obtaining and teaching information as well as what information was taught. The content included medical, hygiene, behavior and personal topics, and the process was defined as direct, indirect, explanation and anticipatory guidance. Patient satisfaction was assessed by a questionnaire following the second visit and telephone interviews at the conclusion of the study.

The results of Osborn and Woolley's study showed that group visits were as efficient as traditional, individual visits and required, on average one minute less per patient than individual visits. They found that group visits were more effective than individual visits as mothers attended more recommended visits when participating in the groups, however the total number of

health care services utilized did not vary significantly. The content varied significantly between the group visits and the individual visits. In the group visits, less time was spent on physical aspects of care, and more time was spent on personal issues and daily care. Satisfaction of participants was equivalent whether the mothers participated in group visits or received individual care. Overall, feedback was positive indicated by eight of the 11 groups requesting to continue the group visits once the study had concluded and 37 of 38 mothers acknowledging that they would participate in the groups with their next child.

Rice, Miles and Slater describe a comparison of group versus individual care briefly in an abstract.[40] The population was over 95 percent white and mostly middle-class and married. This contributes to potential selection bias, confounding and little external validity. It was not random assignment, but sequentially determined as to who would participate in the group or individual care. The measurement bias in this study was likely to be low as all of the visits were conducted by the same person. Questionnaires were used to assess the outcomes of knowledge of child care and development, maternal support and maternal depression. The results reported in this abstract, although none were statistically significant, suggest that mothers who participated in group care did obtain more knowledge of child care and development and experienced less depression. The reliability and validity of these scales, CDQ, MSSI, and CESD were not reported in this abstract.

Dodds et al. examined the effectiveness of group health care by focusing on the amount and extent of information covered by pediatricians in group versus individual care.[41] One group of physicians performed only individual visits and the other group held both group and individual visits. There were only 14 groups and 62 individual visits. A small number of visits were observed and only two were compared statistically possibly limiting the significance of the

results. The groups were not evenly distributed and results in potential measurement bias. Also, the possibility for bias exits as the physician's behavior may be altered when under observation.

The results of this study, however, found that discussions in the group visits addressed more than half of the recommended content in each category (safety, nutrition, behavioral, parenting, sleep and toilet training) with no additional time per patient required. However, in individual visits, except for toilet training, less than half of the recommended content was discussed.

In Taylor, et al., "Health care utilization and health status in high-risk children randomized to receive group or individual well child care," a randomized controlled trial (RCT) was performed comparing group well-child care to individual well-child specifically in members of what they define as a "high-risk" population.[31] This population was defined as having one or more of the following maternal risk factors: age <20 years at delivery, poverty, single, less than a high school education or history of substance or physical abuse. The study was an RCT using intention-to-treat design to analyze the data. The population was large, but selection occurred only from urban centers and because of the specific population chosen for this study, it is less generalizable than desired. In this study, for those patients in experimental and control groups, the time spent per patient was similar, and there was not a difference in health status (including immunization rates) or health services utilization. Authors found no benefits unique to the group visits, but no harms resulted from this model of care. Compliance was low for the group visits and may bias the results toward the null.

Taylor et al., in "A randomized controlled trial of group versus individual well child care for high-risk children: maternal-child interaction and developmental outcomes," a companion to the above-mentioned study of high-risk children focused more on outcomes related to

development and maternal-child interactions.[30] The study population was the same as the previous study and has the same limitations. All of the desired outcomes were only obtained on 86 patients thus leading to potential bias and insufficient power. The scales and screening questions have been validated and thus result in reliable information. The main result of this study is that group visits are a feasible option for care in high-risk children. The outcomes were at least equivalent for those children receiving group care as compared to those children in individual care, and no more provider time was needed to accomplish these ends.

In yet a third study published from Taylor et al.'s study of "high-risk" infants the authors focused on maternal outcomes for the participants of group visits.[32] The population was the same as previously discussed and data was collected on 213 participants and questionnaires were completed by 88 percent of these women. This is a good response rate and helps keep selection bias low. Still, the original population is limited and the low group-visit compliance rates may bias the findings toward the null. This study did not find any significant difference in the outcomes studied.

Part II: Exploratory Study of Group Well-Child Care

WellBabies program at the University of North Carolina

In 2006, physicians at the UNC Family Medicine Center developed a new group model of care for well-child visits named, "WellBabies." Two clinicians, with the assistance of the Department of Family Medicine, have implemented the group visits as an alternative way of providing well-child care to their patients. To date, 13 mother-infant dyads have participated in the group visits.

Visits last approximately two hours, and current groups range from four to six participants. Mothers meet in a large room that is equipped with an examination table, scale, a circle of chairs and play mats. The mothers take turns weighing and measuring their babies and then record this information on the history and physical examination form for the visit. While this occurs, in another area of the same room, providers obtain histories for each individual baby and perform the physical exam. When the group re-convenes, the provider asks what questions the group has for today's visit. The questions are compiled into a list and recorded on a board in the room. The questions are discussed along with any anticipatory guidance appropriate for the age of the children. Approximately halfway through the visit, the infants are placed on the play mat and allowed to play with toys or interact with each other. During this time, administrative aspects of the visit are conducted, and if the visit requires any routine immunizations they are prepared at this time. The infants then take turns receiving necessary immunizations, the documentation is filled out and any last questions are received by the provider.

Important to any new model of care is how the participants regard the program. Experiences of parents who participated in the group visit model have yet to be fully explored,

and this study is designed to discover what parents liked, disliked and would change regarding the group model of care. Having the answers to these questions will allow the physicians at the Family Medicine Center to improve their implementation of the group care model. It will also uncover potentially important information for other primary care practices developing group care models for their populations.

In this study of the WellBabies participants at the University of North Carolina at Chapel Hill Family Medicine Center, we will examine the extent to which this model is consistent with the desires of parents. Through semi-structured interviews, we will ask parents who participated in the WellBabies group visits to describe their experiences of group care. While the focus of this study is not on the effectiveness of group visits, we will determine what makes them an attractive alternative to traditional care and an innovative model from parents' perspectives. In parents with children less than two years old who participated in the group care model for their child's preventive care, we will explore their experiences and perceptions of the WellBabies group model. The specific aims of the study are: (1) to understand parents' preferences and rationales for choosing the WellBabies program instead of regular care; (2) to determine parents' opinions regarding favorable and unfavorable aspects of WellBabies; (3) to understand parents' needs and preferences regarding preventive well-child visits; and (4) to elicit feedback for improvement of the WellBabies program.

METHODS

To fully explore the goals of this study, we analyzed responses from WellBabies group participants to questions posed in a semi-structured interview. The questions were designed to address the following aims: (1) to understand parents' preferences and rationales for choosing the WellBabies program instead of regular care; (2) to determine parents' opinions regarding favorable and unfavorable aspects of WellBabies; (3) to understand parents' needs and preferences regarding the preventive well-child visits; and (4) to elicit feedback for improvement of the WellBabies program. In an attempt to gain an understanding of the mother's perceptions of the WellBabies groups in its entirety, mothers were also asked to describe their general experience broadly.

The Principle Investigator for this study was Cristy Page, MD, MPH, a Family Medicine physician and Assistant Professor at the University of North Carolina Department of Family Medicine. The study team was comprised of a research assistant to conduct all of the participant interviews and assist in text analysis. A second research assistant also participated in identifying themes of the data. Also involved in the study were two assistants who worked to transcribe the interviews.

Study Design

The study is qualitative, based on semi-structured individual face-to-face interviews recorded and transcribed for text analysis. It was approved by the University of North Carolina at Chapel Hill Institutional Review Board.

Study Population and Participant Selection

Participants were recruited from all mothers and infants who participated in the WellBabies group model at the University of North Carolina Chapel Hill Family Medicine Center (UNC FMC) between July 2006 and May 2007. All mothers were made aware of the study by UNC FMC physicians who led the WellBabies groups and then contacted personally by the research assistant and asked to participate. To date, 13 mother-infant dyads of WellBabies participants have been invited.

Data Collection and Analysis

Mother-infant dyads were assigned a unique code number. All information was identified by the code number, and there was no other protected health information linked to the data. A member of the research team contacted the prospective participants by phone describing the purpose of the study and inviting them to participate in an interview about their experiences with well-child group visits at UNC FMC. Interviews were arranged with subjects who agreed and gave verbal consent, and formal consent was obtained at the time of the interview. When participants arrived for the interview, they were again informed of the purpose of the study as well as potential risk and benefits.

After consent was obtained, participants were asked to provide basic demographic information (Table 4) and then participate in an individual interview. Interviews were held at the UNC Family Medicine Center, the patient's home or other site of their choosing and lasted approximately 30-60 minutes each. All interviews were conducted by one member of the research team, and childcare was available as needed at no cost to the participant. As recommended in qualitative processes, an interview guide was developed before conducting the

interviews.[38] The interviews focused on participants' experiences with the infant group visits and any suggestions for improvement (Table 5). The responses were audio-taped to capture all comments, transcribed without link to unique identifiers, and the transcribed document was used for analysis. Consistent with established practice, linguistic notations, pauses, and laughter were omitted without compromising the details of the conversation.[38] There was no monetary compensation for participating.

Table 4: Demographic Information

Family Medicine Center WellBabies Information Sheet

Thank you for taking a few minutes to complete this questionnaire. Your responses will remain confidential. Please circle your responses.

1. **Your Age** _____
2. **Race:** White Black Asian Hispanic Other_____
3. **Marital Status**: single married divorced other
4. **Level of Education:**
   Some High School Completed High School Some College
   College Graduate Graduate/Professional Degree
   Other_____
5. **How many children do you have?** 1 2 3 4 5 >5
6. **Did you receive prenatal care at FMC?** Yes / No
   a. If yes, was this care: group individual
7. **Did you breast-feed your infant?** Yes / No
   a. If yes, how long did you breast-feed?
      <3 months 3-6 months 6-12 months >12 months
8. **Are you or your spouse/partner also a patient at the FMC?** Yes / No
9. **Do you have parents/siblings that live within one hour of you?** Yes / No

Table 5: Interview Guide

- Please think back over your entire experience with the WellBabies" group--What parts of the experience really stand out for you?"?
- What did you like? (Enough time for questions? Support with other women? Enough patient education materials? Etc.)
- What did you dislike about the group visits? (Individual needs addressed?)
- Why did you choose to participate in the WellBabies Group Visits for your infant?
- How many times were you able to attend the group? If you had to miss some why?
- (For mothers with other children): How does the group model compare with the individual visits you had for your other child(ren)?
- What aspects of your child's care are most important to you?
- Do you have any suggestions for improvement? (More patient education materials?)
- If given the choice, would you do it again? Why or why not?

In addition to the caregiver's interview, health behavior and health services data was extracted from the infant's medical record (Table 6).

Table 6: Infant's Health Information

The following was obtained by a medical record review:

- What was the infant's gestational age at birth?
- What is the infant's insurance status?
- What is the infant's birth order (1st child, 2nd child, etc.)?
- Was/is this child breastfed, bottle fed or both?
- Are the infant's immunizations up-to-date?
- How many group visits did the infant attend?

Consistent with established qualitative methods, editing analysis was used to examine the data, and key words were extracted from the transcriptions to identify analytic categories which were then assigned a code.[38, 39] Two members of the research team independently read the interviews and highlighted significant responses relevant to the analytical categories. The team of researchers discussed the themes identified and developed and elaborated on the observations made by reading the interview transcripts. Based on the questions asked in the semi-structured interviews and the stated aims of the study, the responses were identified and grouped to address each area of interest for this study. Where there was disagreement on the assignment of responses to a particular analytic category or theme, a third member of the team independently reviewed the disputed data. Disagreements were resolved by further discussion of the questioned response and review of the appropriate categories and resultant themes.

RESULTS

Demographic Information

Thirteen participants met eligibility requirements for participation; however no contact information was available for two of the thirteen. One member of the research team, who was not involved directly in patient care, conducted all eleven interviews with mothers ranging from 19 to 39 years of age most of whom were first-time mothers. Of the women participating, 46% were privately insured, while the remainder of the population had Medicaid (Table 7).

Table 7: Mothers' Demographic Information Results

Variable	% (N=11)
Age	
< 20	9% (1/11)
20 – 30	36% (4/11)
> 30	55% (6/11)
Race	
White	55% (6/11)
Black	46% (5/11)
Marital Status	
Single	36% (4/11)
Married	55% (6/11)
Divorced	9% (1/11)
Highest Level of Education	
Some High School	18% (2/11)
Completed High School	0% (0/11)
Some College	27% (3/11)
College Graduate	27% (3/11)
Graduate/Professional Degree	27% (3/11)
Number of Children	
1	73% (8/11)
2	18% (2/11)
3	9% (1/11)
Breastfeeding	
Yes	91% (10/11)
No	9% (1/11)
Duration of Breastfeeding	
<3 months	40% (4/10)
3-6 months	50% (5/10)
6-12 months	10% (1/10)
Family within 1 hour of mother's residence?	
Yes	46% (5/11)
No	55% (6/11)

Basic health information for the infants was also obtained for each of the infants who received group care including date of birth, gestation at birth, and group attendance rate (Table 8).

Table 8: Infants' Demographic Information Results

Variable	% (N=11)
Age	
< 3mo	0/11
4-6 mo	3/11
7-9 mo	0/11
10- 12 mo	4/11
> 12 mo	4/11
Gestation at Birth	
< 35 weeks	0/11
36-40 weeks	9/11
> 40 weeks	1/11
Unknown	1/11
Number of WellBabies Groups Attended	
Discontinued group care	2/11

Interview Responses

All 11 participants interviewed stated that they had an overall positive experience. One woman summarized her general experience with the WellBabies group by saying, "I enjoy coming to the groups. I think in general it's nice to see other babies that are around (my baby's) age as well as to meet with other parents and hear that everyone's coping or having some of the same successes and obstacles as well." Another woman said her general experience was also positive: "I thought it was great. Coming in as a new mom I needed direction, and … I had a lot of questions. I really wanted answers."

One woman recalled her experience by saying, "I also really, really liked the group setting…I really enjoyed that interaction. I actually looked forward to going to the group visits. I think it was a very, a very positive thing for both me and for (my child)."

Parents' preferences and rationales for choosing WellBabies

The first defined aim of the study was to understand parents' preferences and rationales for choosing the WellBabies program instead of traditional, individual care (Table 9). Reasons stated for patients' reasons to participate included wanting additional support, education, and time from the doctor and desire for additional support from other moms.

Table 9: Aim 1 – Reason for Choosing WellBabies

Aim 1: Parents' preferences and rationales for choosing the WellBabies group	
Additional Support from other moms	7/11 (64%)
Additional Support/Time from doctor	5/11 (46%)
Bored, Wanted social activity	4/11 (36%)
Personal invitation	2/11 (18%)
Continue group care begun in prenatal group	2/11 (18%)
Predictable Schedule	1/11 (9%)
Education	1/11 (9%)

One participant said, "I could see how it would be nice to meet with other women and other babies… I liked the idea that you got a two hour block of time with the physician." Another mother realized the potential for additional support as she was a new mom with no other support network. "Because I was new, I didn't know anything…I wanted to hear other moms and what they are going through to see if I'm going through similar things. I needed that bond with other mothers."

Many (4/11) participants also stated that they chose WellBabies because they were bored at home during the day or wanted a social activity in which to participate. One woman said, "Honestly, I wasn't doing anything, just sitting here big and bored, so I decided to (participate), and it was actually fun."

Others (2/11) had been personally invited to join the group, and others (2/11) wanted to continue a bond with the same mothers who participated in the prenatal group at UNC, CenteringPregnancy©, who were also continuing with the pediatric well-child groups. Still another noted that her reasons to participate centered on having a very predictable schedule of visits.

Even with the variety of reasons for choosing to participate, all of the women said they would participate again. One mother said, "(I would participate again) because I think that my experiences – my first time experiences – would help somebody else."

Parents' opinions of favorable and unfavorable aspects of WellBabies

The second purpose of the study was to determine parents' opinions regarding favorable and unfavorable aspects of WellBabies. Thirteen responses were identified that arose repeatedly from the respondents' comments regarding favorable elements of the group visits (Table 10a).

Table 10a: Aim 2 – Favorable Aspects

Aim 2: Favorable and Unfavorable aspects of WellBabies	
a. Favorable Aspects of WellBabies	
Enjoyed structure/flow of visit	11/11
Support from other moms	9/11
Developmental comparisons	8/11
More Reassurance/support from doctor	8/11
Hearing a variety of experiences	7/11
More parental involvement	7/11
More time with doctor	6/11
"It was fun"	4/11
Social activity	4/11
Same Doctor every time	3/11
Multidisciplinary team	3/11
Continuing prenatal bond	3/11
No wait/fast appointment	3/11

Many mothers simply stated that the groups were "fun." Others emphasized the beneficial aspects of additional support from the other mothers and the variety of experiences shared among the group of women. "It's nice," one woman said, "Just to know that you're not out there coping with the stuff all by yourself....." Another woman, who valued the breadth of experiences shared in the group stated, "It was good (hearing) from so many people. You can get some experience from (other) people who will share it. Especially with a first baby, a first daughter."

Mothers agree that it is helpful to hear the other mothers' concerns as they are often regarding issues that they, themselves have not yet thought of. "I like being with the other moms...Being a new mom myself, they were able to ask questions that I wouldn't have thought to even ask." Other new mothers wanted not only the experience but support as well. "Just being a first time mom and not really having any family around to help...I think it is really important to know what to look out for, and I feel like the questions that other moms ask is very helpful in triggering things for me to ask."

Even for the women who were not first-time mothers, they acknowledged the benefit of sharing experiences and enjoyed being able to help the new mothers. They also realized that these new mothers had valuable insight to share as well. "Being that I wasn't a first time mom, I really felt like I benefited the other moms in there, by having the experience. And then, there were some things they would say that I wasn't aware of, too...I think it helped both ways." Another mom said, "(The group still benefited me) because some things you go through with your first child you may not go through with your second or third."

Mothers enjoy the support that is established not only with the other participants but with the provider as well. Additional support from the doctor was described in terms of consistency

with the same doctor every time, longer visits and additional reassurance. One woman said, "The doctor has enough time with the baby to observe her…We're in the room for two hours and I'm sure the doctor is paying attention to what is going on with the babies during that whole two hours as opposed to just showing up in the doctor's office for ten minutes and that's the chunk of time you observe."

In addition to the provider, the group setting allowed for multi-disciplinary support that mothers recognized as a benefit. One mother said, "I really enjoyed just learning and knowing what to expect and learning from other moms and learning from the doctor and learning from the nurse. In individual visits you don't have the lactation nurse in there with you, and so that's always helpful to have two brains to pick."

Mothers repeatedly mentioned that they liked seeing their child interacting with other children about the same age and being able to draw developmental comparisons. "We get to learn about each other's babies," one woman said. "They're the same age, but most of them are doing different things…It's just good to see everybody and what their babies are doing."

Mothers also identified the participation and involvement in their child's care by weighing and measuring their own child as a positive element of group visits. One woman said, "I also liked the fact that there was more involvement. When you get a traditional doctor's visit, they take all the vital signs, so getting to put him on the scale and weigh him myself and measure him... I really enjoyed that aspect of it, too."

Additionally, many of the mothers who participated in the group visit model noted that there were numerous advantages to the groups relating to administrative and office-level aspects such as wait-time. One participant said, "You don't have to wait to get into the

appointment…You get there, you go in, you have your appointment and you leave. That way you're not just sitting in a waiting room waiting."

Few mothers expressed specific dislikes about the groups (Table 10b).

Table 10b: Aim 2 – Unfavorable Aspects

Aim 2: Favorable and Unfavorable aspects of WellBabies	
b. Unfavorable Aspects of WellBabies	
No unfavorable aspects	8/11
Lack of individual time/attention	1/11
Comfort of facility	1/11
Scheduling Conflicts	1/11
More patient education	1/11

Two of the 11 mothers withdrew from the group during the program. One mother chose to discontinue the group because the location of the Family Medicine Center was no longer convenient after she moved midway through the program. The other participant that discontinued the group care stated that lack of individual time and attention was a problem and this eventually led to her withdrawal from the WellBabies group. "I needed that one-on-one attention…Even though we did take the babies to the side, it was really chaotic sometimes…it's just I'm scared

some things will get missed." One of 11 thought lack of individual time and attention could be a potential problem but it had yet to arise. "It's open and you can talk about anything you want, but I guess there might be some things that you might not want to bring up to the whole group, and it doesn't seem like you really have that kind of a forum to be one-on-one completely with the physician…I haven't had anything that I don't necessarily want to bring up in the whole group, but I'm sure there might be something, sometime."

The remaining nine mothers thought lack of individual time was not a problem. One mother said, "I did (feel like I got enough time for individual attention)…if you ever had a personal matter you needed to talk to the doctor about, you could take her aside and do that, and it wasn't a problem." Another mother said, "I feel like I learned a lot more from other mothers and from the doctor and from the nurse. I actually feel like we get more attention then when we were doing the individual (visits)."

Comparison to individual care

Mothers were also asked to make comparisons to traditional, individual care if they had had such an experience. One woman said, "I missed seeing the other children and seeing where the other children were developmentally…" Another woman said, "I think the difference is you feel like you have to come in with a list of questions when you sit down with the doctor in a standard office visit. Here you get the opportunity to do brainstorming a little bit. You're not forced to come in with a list of questions, and you don't feel quite as much pressure that you're taking up the precious doctor's time answering all your silly questions. It's more relaxed, and it seems more personal. It doesn't feel like she's just a slot in the daytime appointment book."

Parents' needs and preferences regarding well-child care

The third aim for this study was to understand parents' needs and preferences regarding the preventive well-child visits. Parents were asked what part of their child's care meant the most to them or was the most important part of their care. For preventive care, many mothers placed value on a thorough physical exam (3/11). They also desired to feel like they understood the information received in the visit (3/11) and to have enough time to ask questions and have their children observed (3/11). Over half of the mothers responded that a good relationship with the doctor was the most important aspect of their child's preventive care (6/11). One mother said, "I like a doctor who can make me feel okay about things." Another respondent said, "I want to feel confident in the abilities of the physician and have a good rapport with them." Going to a practice with a good reputation and convenient location was mentioned by another mother.

Suggestions for improvement

The final aim for the study was to elicit feedback for improvement of the WellBabies program. Data suggests a positive response to the model, and two of the eleven mothers had no suggestions for improvement and liked the groups as they currently are structured. Suggestions for improvement that were identified focused on improving contact networks for the mothers outside of the visits (2/11), better scheduling of visits (2/11) and patient education materials (2/11).

Two mothers also suggested incorporating individual time into the group visit. One of these mothers said, "If you had … a separate little room or area while (the doctor is) examining her you could just have a little bit of one-on-one time with (the baby during the physical exam)." Another mother said, "That one-on-one attention, especially with the vaccinations, instead of

doing it as group, is important, but I still think the group is great. Keep the group, but just keep that one-on-one baby attention."

DISCUSSION

WellBabies group visits appear to be a positive experience for the participants and offer parents unique and valuable services. The support provided from the other parents is an aspect of the group model that is not typically provided in traditional well-child care visits. All of the participants interviewed stated that their overall experience with the WellBabies group was a positive one and an acceptable method in which to receive preventive well-child care. The sample of 11 interviews is appropriate for this purpose as the emphasis in this study and other exploratory studies is to gain "detailed data from a relatively small number of respondents."[38]

Some of the positive themes identified by the mothers recurred in multiple categories. Many of the reasons stated for wanting to participate also were mentioned as favorable aspects of the group. Support from other women, being able to make developmental comparisons, support from provider, learning from other women's experiences and more parental involvement in the actual visit were some of the most common themes.

Throughout many of the statements the women made regarding the group and the care from the provider, the theme of support persisted. Support was illustrated by remarks concerning relationships with the other mothers, time spent with the physician, having resources from multiple disciplines and receiving constant reassurance from the provider. Not only were group

visits supportive and a social network for parents of infants, WellBabies also provided support and social interactions for the babies.

Another area of support experienced by the participants of the WellBabies groups was the multidisciplinary support available. During most of the visits, there was a nurse and a lactation consultant in addition to the physician. Participants acknowledged this element of the WellBabies groups and pointed to it as a definite advantage of the groups.

In exploring participants' likes, dislikes and preferences for their child's well-child care, many comments drew upon comparisons with traditional, individual care. Although the participants are in a group setting, the extra time makes the visit feel more personal for the parents. They feel like they have plenty of time for questions, the doctor has more time to observe their children, they get to know other mothers, and they are able to see their child interacting with other children about the same age. The additional administrative advantages that many women identified, such as not waiting to check in or check out, also made the visits appealing to patients.

The body of literature on group visits is limited, however. Only a few experimental studies exist that evaluate outcomes concerning infants and mothers participating in group visits. Only one was randomized and controlled. There were others that had controls, and another was an exploratory pilot study similar to the one we conducted. However, none of them is able to be compared to the research presented here as previous research groups addressed a different study question or involved a different population. The populations were either narrow, high-risk, all first-time moms or involved very different in process and approach to the group visit. Some of the group visits had individual time and some were run solely by nurse practitioners.

These studies all find that group visits are a promising alternative for well-child care but their generalizability is limited, and many questions still remain. Feldman's explorations of mothers' perceptions suggest that women enjoy the group visits, but this study is only first- and second-time mothers. It is also more than 30 years old, and the needs and preferences of patients and healthcare providers have evolved. The randomized controlled trials by Taylor et al. do not have strong results pointing to group care as a better alternative than individual visits, but they are not worse. With the limitations to this study, the authors admit that the results are likely biased toward the null, and if larger, longer studies were to be performed, more of a difference might become evident.

There are descriptive pieces published on the feasibility, advantages and disadvantages of group care in the well-child population.[27, 28, 29, 42, 43] Osborn described a possible format for group visits as a solution for increasing provider-patient time but still included individual time with each child as a part of the visit.[27] She also explored the advantages, disadvantages and acceptability of group care.[28] The advantages, including more time for education, sharing experiences, more opportunity for physicians to observe the parent and child and the added reassurance, are the same advantages proposed and desired in today's climate.[28] Thus, something was lacking more than two decades ago that physicians are still trying to improve upon. The limits of the acceptability of group visits that Osborn addresses deal mostly with cultural barriers. While her initial studies included mostly white, middle-class women, the study described in this paper is more diverse and attempt to explore the suitability of group visits to mothers of different age, education and cultural backgrounds. Similarly, the disadvantages that Osborn and Feldman describe are similar to the disadvantages faced today – scheduling and space.[24, 28] In the study described in this paper, however, scheduling was not a problem, but one

of the eleven women did suggest a more comfortable setting indicating an element of the group visit that needs to be improved.

Although some of the disadvantages and advantages of group visits have not changed since Osborn's studies in the 1980s, an important part of evaluating and improving the group-care model is adapting it to make it compatible with today's health care environment. The groups may have to be somewhat larger than the groups studied in order to be efficient. The groups in this evaluation ranged from three to six participants but averaged four. As currently arranged, groups would need to average five participants in a 90 minute appointment to be more timely than individual visits.

Other options would be to include more material per visit or shorten the visit. Although some mothers acknowledged that the length of the visit was sometimes too long for the information presented, they enjoyed having the time allotted just incase it was needed. With this large block of time reserved in the doctor's schedule, patients felt they had plenty of time to get their needs addressed. While shortening the time would allow for a more efficient model of care, one of the positive aspects of the visit may be sacrificed.

Other changes may have to be considered in order to fully address today's patients' health care needs. As two of the mothers suggested, although group visits are becoming more widespread, individual time and attention is still something patients may need at some point in their healthcare. Suggestions involved providing one-on-one time during immunization administration. This would provide not only some individualized attention, but may allow the nurse to work more efficiently and make the shots less disruptive to the entire session. In effect, the group visit may be shortened by providing a little extra time alone with each child.

Developing education materials for the participants of the WellBabies group is another step toward making the group a comprehensive, effective model of care. Many of the mothers, although content with the patient education materials is currently provided, said they would appreciate additional materials. The concept of providing all of the education materials for the first year together in a comprehensive notebook was presented to the participants and was well-received.

Based on this evaluation, the group model for well-child care appears to be a promising alternative, and additional research and evaluations should be conducted to further investigate additional elements of group care. Future study includes a cost effectiveness evaluation of the WellBabies program and a prospective comparison of health outcomes and quality indicators between patients receiving individual versus group care. One such study could be a randomized controlled trial to answer the question of if children participating in a group model of care have a longer breastfeeding duration than those participating in traditional, individual well-child care. Breastfeeding duration would be used as the primary outcome and indicator of health as despite proven health benefits of breastfeeding less than one-third of infants in 2001 were breastfed long-term (greater than six months). [44] There is much potential for improvement in this indicator and identifying a significant effect of an additional one month of breastfeeding could be illustrated using a total population of about 580 participants in the control and intervention groups combined. Secondary questions would include identifying if there are differing rates of immunization and number of emergency department or visits to health care providers between participants in individual care versus group well-child care. Lastly, a measure of efficiency would be calculated by the average time spent with each infant. The hypothesis would be that children receiving group care will have longer breastfeeding duration, better immunization rates,

and less other health care utilization than those receiving traditional care, and the time spent per child will be no more, and perhaps less, than what is currently spent in individual traditional care.

Another area for future research would be an evaluation of provider satisfaction with group visits conducted through a survey of physicians and other healthcare providers involved in group visits. It would be helpful to know what the providers who would be involved in delivering this type of care think of the program, what they like, what they do not like, and where they see area for improvements.

The parents, as another participant of the visit, have outcomes that may be evaluated in a further study of group visits. Parent-child interaction, health-care understanding, depression and other parent-centered outcomes could be the focus. It would be interesting, as well, to involve fathers, husbands or partners in the evaluation of well-child group care. Some fathers may not attend group visits as there is not room at the facility, or there may be other reasons more fathers and partners did not attend the visits. They are encouraged to attend and it would be worth exploring the barriers to attendance as much of the group visit focuses on family dynamics and influence on health.

There are limitations to the current exploration presented in this paper on mothers' perspectives of group visits. A small sample was identified which consisted only of black and white women. It would be more beneficial to have additional ethnic, racial and cultural groups represented. This study did have a well-balanced division of marital status, age and education. Furthermore, some women were personally invited to participate in the WellBabies program while other participants sought it out on their own. This may be an important variable and lead to

differing responses for the respondent's reasons to participate and their needs and preferences regarding well child care.

Despite these weaknesses, this study has several strengths. The participants were a more diverse group of experienced and new mothers who had participated in the group model of well-child care than previously reported. One interviewer discussed the groups with the eleven participants which standardized the process. The experiences of the mothers were broad and based on the groups conducted by two different physicians contributing to the generalizability of the conclusions.

CONCLUSION

With the positive remarks and the advantages given by the respondents of group care over traditional, individual care, group visits for well-child visits are a promising alternative. The WellBabies study is important as it lays the groundwork for further development of new care models and investigation into group well-child care. It was a positive experience for the participants and appears to be a practical way to provide care. The favorable and unfavorable aspects discussed by the respondents are relevant not only to the delivery of group care but traditional, individual care as well. Support appears to be the foundation for the group care, and the desire for support is why many women chose to participate. The support from other women and many providers is the reason why women continued to participate, and the hope of continuing this support and being able to provide guidance is why many of the women would participate again.

All of the women involved in the WellBabies program said that they would participate again if they had another child. This insight maintains that the benefits of group visits are not just for first time, less-experienced mothers. To keep up with changing times and sharing acquired knowledge, group well-child care appears to be a valuable alternative model of care for new and experienced mothers of all ages and educational backgrounds.

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